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deTail of Two Cities: Utilizing Urban Analysis and Recombination as the First Project in the Fundamental Design Studio

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Learning from the existing landscape is a way of being revolutionary for an architect. Not the obvious way, which is to tear down Paris and begin again, as Le Corbusier suggested in the 1920's, but another, more tolerant way; that is, to question how we look at things.

-Robert Venturi[1]

Introduction

Once upon a time... is the beginning to many a childhood fable in which two characters fall in love against the wishes of family or friends. In the end, one of the protagonists defies the odds and makes an extreme sacrifice to prove his or her love for the other. If they are lucky, they persevere and all live happily ever after. These fables describe a contested terrain commonly found in literature and folklore, a landscape of adversity and danger fraught with heartbreak and familial feuds. It is common for these tales to impart on a younger generation a set of moral standards: lessons of tolerance, perseverance, love, and forgiveness. It is the coming together of two distinctly opposed familial conditions that is perhaps the most interesting, especially when such tales bring together the pauper's son and the king's daughter, or the prince and the poor stepsister. In any case, it is with this in mind that I have developed a methodology of contextual analysis and critical urban recombination that teaches students how to understand the essence of a place, teaches them about different settlement patterns, and teaches them an abstract, contextually based design ethos.

In the fundamental design studio, I have been using two disparate cities from dramatically distinct topological and topographical situations as the protagonists in an American urban love story. Students dissect the essential structure and quality of each city into discernible layers of data, and speculate about the similarities and differences between the two. Then collaboratively, students "mate" the cities together to form an offspring city that contains the "genetic" layers of data from its parents. The teams of collaborators must critically transform both cities into one, designing the insertions and overlays from one into the other at the regional scale, precinct scale, and block scale. This project is followed by a small urban institution situated within the newly recombined city and addresses some of the new contextual inventions asserted by the students.

These projects, affectionately named by the students such titles as "Baltinix" or "Richnix", explore the boundaries of existence between two distinctly different settlements: one colonial, the other post war; one geographically formed, the other gridded; one industrial, the other a city of leisure; one a coastal city, the other a desert city. In doing so, students not only are asked to analyze different contexts and settlement patterns, but are required to apply their findings to the task of designing a new city based on those studied. The contested terrain between two such different topological existences is exploited in this project and paper, perhaps shedding light into how other conditions of contradiction can be mitigated and transformed.

History of Project

In the Fall of 1997, I began introducing second year architecture undergraduates at the University of Virginia to basic principles of urban analysis. This was partially an attempt to help breed a new concern for context in students, and mostly a means to help students learn more about how human kind dwells and settles. Few would argue that a student aware of how a place comes to be is typically more facile as a designer of the built environment, and can more effectively design within this understanding a contextually appropriate architecture.

In this exercise, students were asked to observe and analyze either Richmond, Virginia or Baltimore, Maryland and analyze concurrently Phoenix, Arizona. Each group will be assigned a specific urban issue represented in the plan documentation of a certain moment in the city's history. The city will be explored with particular interest to the following urban topic areas. Some of these exercises will require thoughtful speculation on qualities suggested from the formal structure of the plan. Other qualities may be identified through critical reading of significant developments within the city's history.

The intention of this project is to introduce students to different human settlement patterns by critically analyzing different urban conditions throughout the western world, followed by direct application of the lessons learned into urban design projects. Through juxtaposition of dramatically different cities, students comparatively are taught why human settlement takes the forms that it does. A secondary lesson learned is how students used to working individually on their own discreet projects can work together as a design team, similar to how they will soon work professionally.

Students first are introduced to various cities throughout Europe (does not need to be so limited, and perhaps will not be in the future) and the different growth patterns of each as specific to its particular topographic situation. Students then

analyze various American city development patterns and make derivation realizations to European counterparts. Through a series of abstraction stages working in diagram, collage, and bas-relief models, students extract a distillation of their studied urban environments.

Now armed with a toolbox of analytic layers from their urban analysis (street armature, block infill, topographic engagement, etc.) students are put to the task of abstractly dissecting two very different American cities with the goal of eventually amalgamating them into a new urban offspring. Typically one city is colonial and one post-war so that contrasting structures must be understood and manipulated.

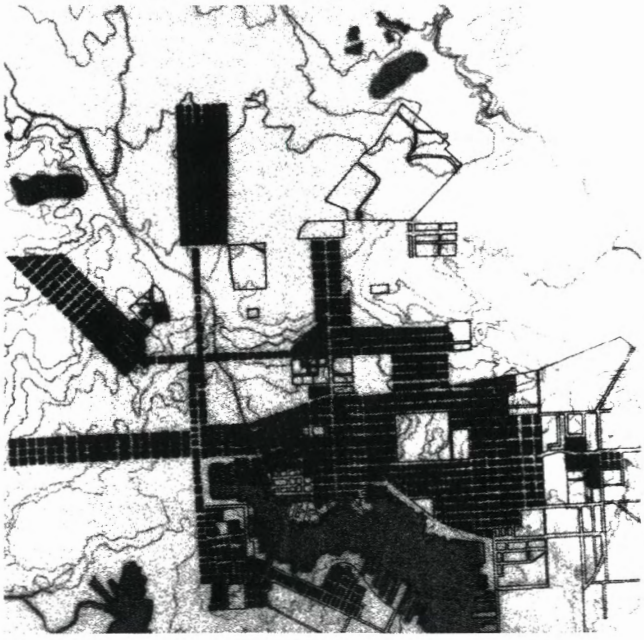
Descriptions of Cities used

Phoenix

Phoenix, Arizona is one of the oldest southwestern settlements in America. Built on the ruins of an ancient Hohokam civilization (hence the name), Phoenix initially saw substantial growth at the turn of the 19th century at the height of the gold rush. Several phases of settlement and growth have occurred due to different populations moving into the desert, including early indigenous peoples, Mexican and European pioneers, religious missionaries, farmers, and capitalists. Each would bring a different lasting nuance to the city, attributing to the uniquely heterogeneous nature of modern Phoenix.

Phoenix was home to its largest growth in the 20th century thanks to its (once) pristine, allergen-free air and warm winter temperatures. Frank Lloyd Wright was one of the earlier "snowbirds", establishing in the 1930's Taliesin West at the foothills north of Scottsdale as a winter home for his family of interns and collaborators. In the latter half of the 20th century, the Phoenix metropolitan area, consisting of Scottsdale, Tempe, Mesa, Chandler, Gilbert, and Phoenix, has had its largest period of explosive growth due to newer industries such as computer chip manufacturers and leisure industries.

Fig. 1. Diagram of Baltinix by Meri Tepper. Diagram has yet to explore introduction of more dramatic topography.



The structure of Metro-Phoenix is the one-mile Jeffersonian grid cardinally oriented. Within each grid exist various subpatterns of development both commercial and residential. The now dry Rio Salado cuts through the middle of the city from northeast to southwest, dividing some of the municipalities from one another. The river itself is why Phoenix is where it is, first settled thousands of years ago by the Hohokam peoples who left the second most elaborate canal system in the world (second only to the Nile Delta). These canals cut organically through the otherwise methodical grid of the city, and stretch for hundreds of miles.

Richmond

Richmond, Virginia is a direct contrast to Phoenix in its structure, history, and evolution. Incorporated in 1737, Richmond began as the selling off of private property by William Byrd to cover gambling debts.[2] Thanks largely to the tobacco and cotton trades, Richmond prospered as a home to the gentile and indentured alike. Numerous warehouses sprung up along the James River that bisects Richmond, and state-of-the-art canal systems and locks were built alongside the river to ease the transport of goods west past the new settlement of Charlottesville, Virginia into the Ohio Valley. Canals were eventually replaced by competing railroads, which were placed directly adjacent to the canals or on top of many of them.

Richmond's prosperity as an inland port city is paramount to its evolution until the American Civil War. Initially placed strategically at the fall line of the James River separating the piedmont from the tidewater areas, the city's tobacco warehousing industry and its ironworks made it one of colonial America's most prosperous cities until its burning during the Civil War. Throughout the late 19th century and all of the 20th century, Richmond has been a site of racial and class tension as the Reformation transformed much of the city from industrial stronghold to urban blight. Today, the city is still struggling with reinventing itself.

The topography around Richmond is comprised of gently sloping hills and tidewater flatlands. The street pattern of the city corresponds greatly to the topography, with many differently oriented grids collaged together. The oldest blocks of the city were laid out tangential to the major bend in the James River and stretch to the northwest along major colonial trade routes towards Fredricksburg, Charlottesville, and Washington. The great forests of colonial Virginia seep into the city and form various parks and greenscapes. Most of the streets are lined with old growth trees, and redevelopment designs at the turn of the 20th century focused on grand boulevards lined with monuments and trees. Currently the major industry is governmental since Richmond is both the state capital and a federal reserve location. Numerous colleges and universities also provide jobs as well as the financial and investment institutions that typically accompany a reserve bank.

Baltimore

Baltimore, like Richmond, dates to the 17th century, and is situated at the fall line between Piedmont and Tidal Maryland. It began as a collection of harbor towns including Canton, Federal Hill, and Jones Town (later to become Fells Point). It was laid out as Baltimore Town in 1730, but did not grow significantly until the late 18th century.[3] Being on a bay, the industry of Baltimore has historically been shipping and shipbuilding. As the innermost harbor in colonial America, Baltimore became a major immigration entry to the United States and is this day still very diverse, complete with ethnic neighborhoods settled by Jewish, Irish, Italian, and Asian immigrants.

The plan of Baltimore is radial, due largely to the collection of small towns around the harbor that grew into the city. Shifting grids all come together towards the north of the harbor where it is oriented cardinally. The topography slopes gently away from the waterfront as rolling hills, and while the city itself is devoid of an expansive tree canopy (as opposed to Richmond's lush vegetation) the city is surrounded by forest and plains as is much of the inland east coast of America.

Methodology

Intelligent observation and analysis can lead to specific and often unexpected insights into a given subject of study. Abstraction is both desirable and necessary in the process of extracting particularized observations from something as complex as a city plan. In addition, abstraction allows the architect to transform ideas that may inform a new context. This notion of exploring the new through the critical study of existing traditions and conditions can influence an approach to both urban and architectural design. The balance between continuity and change is an important aspect of the architect's

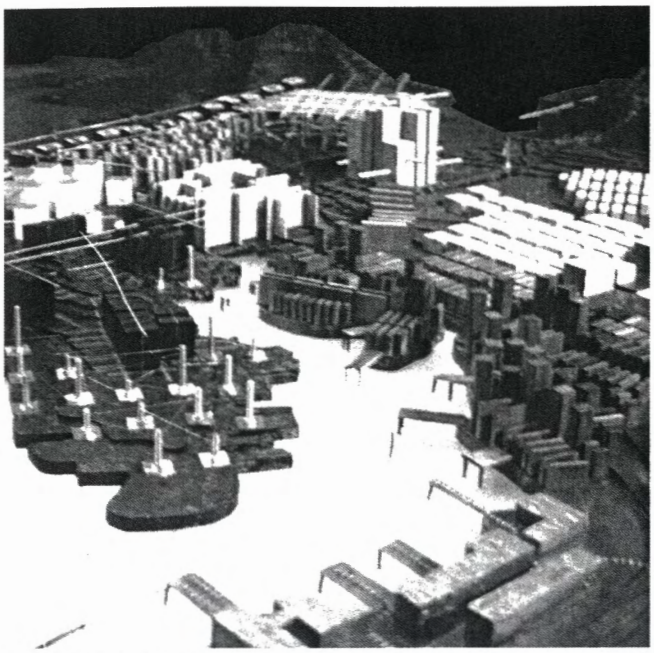


Fig. 3. Detail of Baltinix. Note imported terrain behind city (borrowed from Arizona).

education, and these issues apply equally at the distinct scales of the city, the precinct, and the architectural artifact. This exercise will form the basis for a building design problem that will complete this semester.

Project Goals:

-To investigate the conditions of landform and its effect on urban ordering systems

-To explore abstractions and reinterpretations of urban form through a variety of two and three-dimensional material

Fig. 2. Detail of Baltinix. Note new river/canal system and its realignment of grid at entrance to harbor.

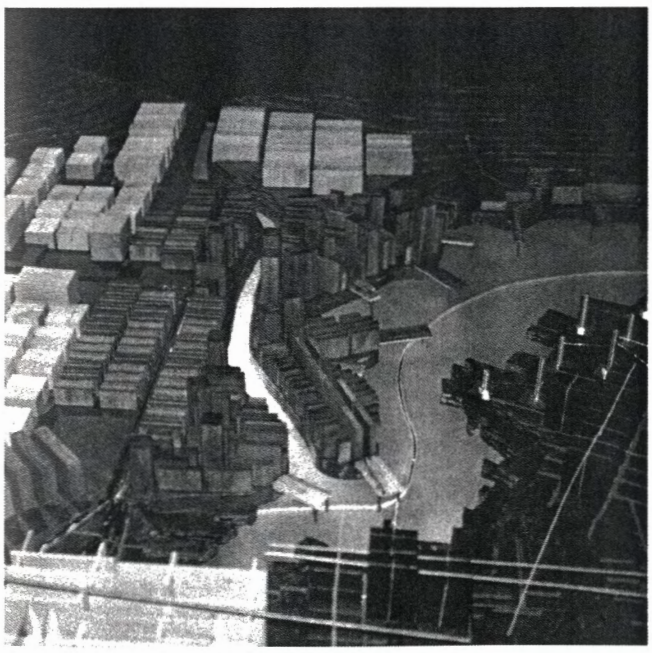
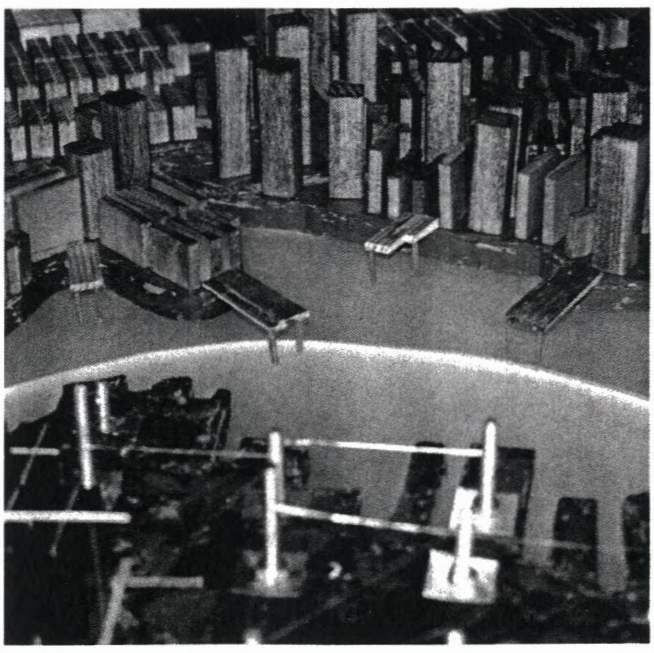


Fig. 4. Detail of Baltinix. Note buildup of density at waterfront (to north of harbor).



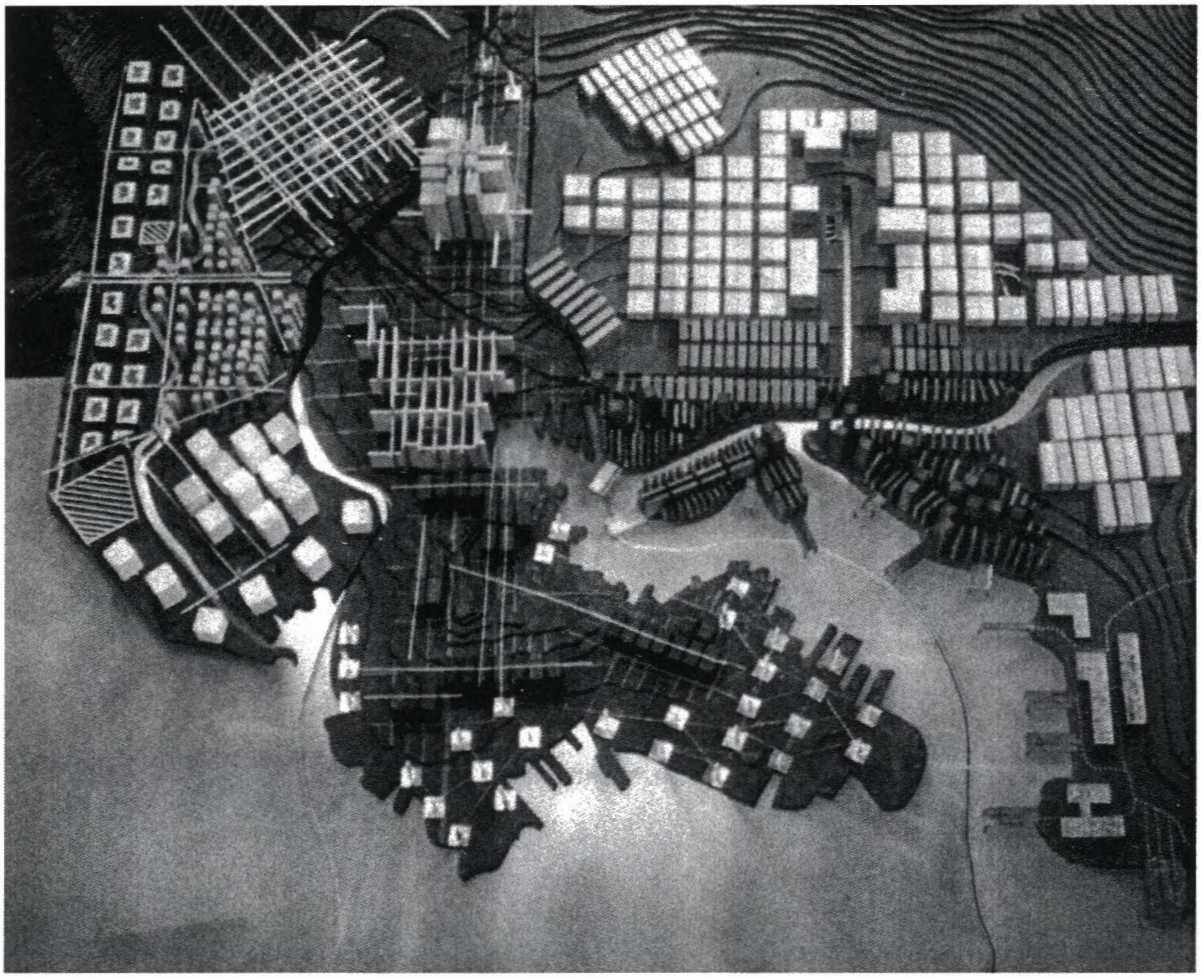
investigations

-To explore urban form as a tangible manifestation of the cultural, social, and political ideals of a culture

-To develop an urban syntax, comprised of the various scales and elements of urban form: streets, squares, parks, blocks, buildings, etc.

-To unearth the essential character of the city as Place...excavate below the surface of the present and perhaps superficial existence of the city to Know the Place.

Fig. 5. Overview of Baltinix. Note the recognizable shape of the "Inner Harbor" of Baltimore.



Analysis

The students begin the project working in teams to unearth the topological identity of their cities. Each team tackles issues such as population and sociological history of city, structure and physical characteristics of city, industrial and political infrastructure, regional conditions, etc. Presentations of team findings and printed reports are then generated for the benefit of the entire class, allowing for a thorough comprehension of the cities and the design determinants that shape them.

The students then work individually diagramming the various layers of urban structure, including but not limited to: street organization; neighborhood and precinct boundaries; highway, railroad, and other transportation infrastructure; block patterns, density, and building heights; civic spaces, gathering places, and park systems; topography and hydrology.

Layers of structure

Landform

The term "landform" refers to the particular form that the land, water, vegetation takes in this place. Describe hills, valleys, plains, streams, rivers, bluffs, crests, etc. Does the development of the city respond to the landform? What is the spatial quality found within the given landform, and how is this topographic system an ordering element in the city?

Urban

The urban layer is comprised of the streets, squares, and public spaces that structure the city. The grid of the city acts as a spatial skeleton to the city, connecting and binding different places and points together. It is one of the primary spaces that we inhabit in the city, and the nature of its structure helps shape our perception of the city. How does the character and orientation of the grid respond to landform and influence the placement and edges of neighborhoods, precincts, and parks?

Fabric or Texture

This is the flesh, the meat of the city structured and held in place by the urban grid. It is made up of repetitive building units and structures, not necessarily just building modules. Park systems, pockets of open space, institutions such as hospitals and schools, even masses of parking have a certain texture to them, and the combination of these interconnected fields and patterns make up the fabric of the city. What kind

of spatial quality or qualities do these systems define in the city, particularly as ordering devices?

Spatial Nodes & Connections

These joints and connections are the place of overlap and mediation of the systems described above. It is a system of street intersections, of spatial thresholds between public, semi-public, and private spaces, of edges between fields, of openings and passages within blocks into internal alleys, courts and vestibules. How can an abstract language be invented to describe this layer where overlap occurs?

Cities all have different historical reasons for existing and different site-specific conditions to which the form of the city evolved in response, whether industrial, hilly, and amorphous (Pittsburgh, Pennsylvania), leisure, flat, and gridded (Las Vegas, Nevada), or other (linear, radial, etc.) Students have to discern how the form of a city evolves as a response to its socioeconomic history and its site conditions as well as other determinants. Usually these forces are intermingled the site conditions more often than not tied to the major industry of the place.

Fig. 6. Overview of Richnix. Note the proliferation of new waterways through city (major arterial disruptions of grids).

Transformation

The real crux of the project begins when the two analyzed cities are juxtaposed for the first time. Typically one specimen will be larger than the other, in which case students can discern where the boundary between urban density and suburban sprawl exists and work with the former rather than the latter. In most cases, discrepancy between sizes does not pose a problem since the cities are being compared at the level of diagrammatic abstractions. It is the structural characteristics coupled with socioeconomic forces that form the basis of the transformation.

Transformation begins with the topographic conditions of the place. In the case of Richnix (Richmond, Virginia and Phoenix, Arizona), the common element of the river remains, but the flat silt basin of Phoenix is transplanted by the sloping topography of Richmond. The extreme volcanic mountains of Phoenix that surround the city and are interspersed throughout are now placed into the topography of Richnix. The ancient irrigation canals of Phoenix are also placed into the new city, and wind their way between the river and mountains. The newly constructed landform, river valley sloping up to jagged crags of mountains, now forms the initial basis of the transformation.

How then would a city be laid out on such a topography? The students must first decide the socioeconomic basis of the city. In the case of Richnix, a colonial resort city, the form of the city is a direct response to the water. The canals, no longer needed for either irrigation or the transport of industrial goods, are now used for recreation. The street grid in many places through the city is oriented to front the canals and river rather than turn their backs to them (everyone in Richnix gets to vacation or live on or near the water). The one-mile grid of Phoenix becomes contorted to respond to the river as a

Fig. 7. Detail of Richnix.

meta-grid, with smaller scaled street patterns that exist within.

The grid structure breaks down at the periphery of Richnix, where the city meets the mountains. The same occurs inside city limits where smaller volcanic mountains lie. This is consistent with the existing conditions in Phoenix. The cardinal grid in Phoenix resumes often on the other side of the disrupting landform, whether mountain or water. This is the case for neither Baltinix nor Richnix as the grids are already oriented specific to topographic features. Thus a new grid orientation would occur on the other side of a disrupting landform specific to conditions found there.

Students decided to reinvent freeway arteries that slice violently through Richmond as canals and lock systems used for transportation and recreation. The desire to return much of the industrial infrastructure came from not nostalgia as much as maximizing prime real estate for resort and community planning based on the primary industry for Richnix: leisure industry. Pedestrian and vehicular bridges were placed where none existed before (over the former highway) so that the neighborhoods marginalized into inner city ghettos could be reconnected to the majority of the city. Property found along the former freeways that is currently boarded up and condemned now benefits from the water frontage.

Conclusion

One of the benefits of using this sort of recombination project is that it forces students to critically analyze a very complex, organic set of issues layer by layer, understand the connection between (previously-thought-to-be disparate) layers, and use this new found understanding about the evolution of the American city in a design project. This differs from the type of site analysis that accompanies most design projects in that students are working only with what is typically called context, without inserting their own architectural vocabulary into it. Their designing is limited to reconstituting what vocabulary is already present. The hope is that through abstraction, students will be less prone to analyze a place and inevitably discard their analysis in the excitement of creating something new.

An example of the application of their discoveries is what happens when a city that formerly had a gentle, constant slope, is reconstituted to also have steep rocky landforms introduced to its interior. The street grid, infill fabric, infrastructural lines, and organization of neighborhood precincts are all disrupted and must be redesigned. How the street grid is changed will have an effect on the particular texture of the resulting block fabric. This in turn will work together with changes to neighborhood boundaries to affect the placement of industrial infrastructure, visa versa and so on. Students learn that all components present in any design problem have across the board repercussions in unpredictable ways, and careful attention must be applied so as not to compromise a project as a result to not considering everything.

The introduction of waterways to lines through the city once created by highways, train tracks, and other infrastructure at times unearth the pre-existence of water already. Students learn that historically, newer transportation technologies often were placed adjacent to or on the remains of competing and/or outdated ones. This being said, the reintroduction of the waterways have dramatic effects on other components of the city, such as placement of institutions and parks, orientation of the street grid, property value, neighborhood boundaries, etc. Every action taken has an expected and at times unexpected reaction that can thwart young designers' intentions.

Another benefit is that students must look beyond what is simply present in the physical environment of a city to see what sociological and economic forces help to shape it. This lesson probably more than any other heightens students' perception of how and why human settlement occurs, and what patterns result from conditions in place, whether cultural, topographical, economical, or political.

The depth of analysis in the undergraduate fundamental design studio will vary drastically from that of a graduate studio. The students who played a part in this project over the years all possessed a necessary naivete that facilitated a more fluid transformational process. It is my hope that such a project could be attempted at the graduate level taken full advantage of more thoroughly honed perceptual and conceptual abilities. As a byproduct of the project, a collection of in depth analyses of various American cities is stockpiling, and can one day be turned into an archive to be used by more than the studio.

Notes:

1 Venturi, Robert Learning from Las Vegas, The MIT Press, Boston, Massachusetts, 1977.

2 McGraw, Marie Tyler At the Falls, Richmond, Virginia, & Its

People, The University of North Carolina Press, Chapel Hill, North Carolina, 1994.

3 Olson, Sherry H. Baltimore, The Building of an American City, Johns Hopkins University Press, Baltimore, Maryland, 1980.

4 I want to acknowledge the great support that faculty at the University of Virginia have provided over the years as this project has developed. In particular, former departmental chair Peter Waldman, who when hiring me in 1997 encouraged me to somehow integrate my thesis work in Arizona with the analytic curriculum of the second year studios at Virginia. Little did he know that such madness would result. Lucia Phinney, Distinguished Lecturer in Architecture was also helpful in developing the transformational pedagogy.

Students Credits:

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